CLAIMS

1. A device for positioning and controlling rail vehicles (4) including fixed stations (1) comprising first signal transmission - reception means (2) and a central control station (3) to which are connected the fixed stations (1) and controlling a transport zone,
characterised in that,

- each rail vehicle (4) comprises second signal transmission - reception means (6) containing a specific identifier of the transmitter and at least one message,
- the signals transmitted by the first transmission - reception means (2) of the fixed stations (1) contain a specific identifier of the transmitter and at least one message,
- the central control station (3) sends rail operation control orders,
- each rail vehicle (4) and each fixed station (1) include processing means (8) for determining the identifier and at least said message of each signal received,
- the signals of the first and second transmission - reception means (2, 6) are non-sinewave radio signals with a very large passband whereof the frequency spectrum ranges between 1 and 10 GHz.

2. A device according to claim 1, characterised in that each rail vehicle (4) includes on the one hand, means for determining the position and the direction of said vehicle in the transport zone and on the other hand, means for determining an actual speed measurement of said vehicle, said means receiving signals from the processing means.

3. A device according to claim 1 or 2, characterised in that each rail vehicle (4) includes means for detecting passive obstacles or other vehicles on the lanes receiving signals from said processing means.

4. A device according to any of the claims 1 to 3, characterised in that the localisation in the transport zone, the speed and the direction of each rail vehicle (4) are determined on the one hand, and the detection of obstacles is realised on the other hand, in real time and simultaneously.

5. A device according to any of the claims 1 to 4, characterised in that said specific identifier is obtained by pseudo-random encoding.

6. A device according to one of the claims 1 to 5, characterised in that the rail operation control orders transmitted by the central station (3) include navigation instructions of at least one rail vehicle (4).

7. A device according to claim 6, characterised in that said orders comprise a communication for said rail vehicle (4).

8. A device according to any of the claims 1 to 7, characterised in that the central control station (3) includes a processing unit for centralising and processing the data sent by the fixed stations (1) and means for displaying said data on a screen in real time.

9. A method for positioning and controlling rail vehicles including fixed stations (1) comprising first signal transmission - reception means (2) and a central control station (3) to which are connected the fixed stations (1), characterised in that,

- each rail vehicle (4) comprises second signal transmission - reception means (6),
- a specific identifier is determined for each of the first and second transmission - reception means (2, 6), said signals being non-sinewave radio signals with a very large passband whereof the frequency spectrum ranges between 1 and 10 GHz containing said identifier and at least one message,
- for each of the signals received by the fixed station (1) and by each rail vehicle (4) the identifier and at least said message of this signal are determined by processing means (8),
- rail operation control orders are sent by the central control station (3).

10. A method according to claim 9, characterised in that the transport zone controlled by the central station (3) and wherein the rail vehicles (4) are displaced, is divided into a grid of points defined by the repetition of a same elementary mesh of length D.

11. A method according to claim 10, characterised in that the length D of the elementary mesh is set typically to several hundred metres.

12. A method according to claim 11, characterised in that rail operation control orders are sent by the central control station (3) to each rail vehicle (4) so that a single vehicle (4) is included any time over the length D.

13. A method according to claim 11, characterised in that rail operation control orders are sent by the central control station (3) to at least two rail vehicles to conduct a rendezvous manoeuvre over the length D.

14. A method according to claim 10, characterised in that the length D of the elementary mesh is variable with time.

15. A method according to claim 14 characterised in that the length D of the elementary mesh is determined in real time from the signals transmitted by each rail vehicle (4), sad length being at least equal to the safety distance D_{min} between each vehicle, the central station (3) sending rail operation control orders to each rail vehicle (4) for keeping said distance D between each vehicle.

16. Method according to any of the claims 9 to 15 characterised in that passive obstacles on the lanes are determined by the second transmission - reception means (6) and for each rail vehicle (4) in motion.